Third Joint FAO/WHO/UNEP International Conference on Mycotoxins

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The Third International Conference on Mycotoxins took place in March 1999 in Tunis, Tunisia. It was jointly organized by FAO, the World Health Organization (WHO) and the United Nations Environment Programme (UNEP) and continued a tradition that stretches back for more than 20 years. The first such meeting took place in 1977 in Nairobi, under the sponsorship of FAO, WHO and UNEP, when 42 countries and ten international organizations met to reach consensus on actions that would restrict the contamination of food products by these natural toxins. This conference was considered very useful. Ten years later, the international community decided that a sequel was needed, this time in Bangkok where 33 countries and six international organizations discussed follow-up and progress during the ten-year interval, and shaped the strategies to be applied during subsequent years.

This is the brief historical background to the third conference which was held some 12 years later in 1999. During the intervening period, new mycotoxins, including fumonisins, were studied more closely by researchers. More recent additional information on, for example, the impact of already-known mycotoxins on human health, and progress in sampling and analysis techniques shed new light on food contamination by mycotoxins. The monitoring programmes initiated several years previously were beginning to bear fruit, and recent developments in regulation, control and decontamination procedures had emphasized the need for international coordination. Some 38 countries and ten international organizations met at this third conference to discuss and agree on future operational priorities.

The problems caused by mycotoxins are now more numerous and better defined, as analytical methods have become increasingly precise and the regulatory framework for mycotoxins in foods and feeds has become more comprehensive (covering greater numbers of mycotoxins in a wider range of products and an increased number of countries). The economic cost of having consignments rejected and withheld from markets can no longer be ignored. At the same time, advances in toxicological research and the development of concepts such as risk analysis make it easier to assess potential short- and long-term health risks. Decision-makers need to be made aware of the health and economic implications so that resource allocation policy for prevention and control can be measured and adequate.

The primary aim of this conference was, therefore, to serve as a forum for the exchange of scientific and technical information, and to make this information available to government officials responsible for policy-making and administering controls so that prevention and control regulations and programmes could be harmonized – the ultimate aim being to safeguard consumer health while, at the same time, limiting food losses. Quite apart from the immediate damage to the exporting country whose economy may be heavily dependent on exports, it seems absurd to waste food resources at a time when food security is a prime global concern.

The guidelines agreed by the international community for future work provide the participating United Nations agencies (FAO, WHO and UNEP) and independent expert committees, such as the Joint FAO/WHO Expert Committee on Food Additives (JECFA), with invaluable markers for their future plans of work and priorities.

The debate began with a situational overview to gauge the level of damage caused by mycotoxin food contamination – an exercise that was made difficult by the absence of comparable worldwide data, although there are many economic estimates. Awareness of the problem needs, therefore, to be raised and constant surveillance implemented.

Four mycotoxins or mycotoxin groups were reviewed to determine insights acquired in recent years: fumonisins, ochratoxin, zearalenone and trichothecenes. It was believed that taking three different perspectives might yield interesting results so case studies were presented on maize (see Riley and Norred on p. 25), coffee and pistachio. These suggested ways of preventing contamination from the mycotoxins under consideration and looked at decontamination options. A previous introductory paper

(Lopez-Garcia, Park and Phillips on p. 38) had addressed the issue of integrated mycotoxin management systems.

These concrete examples of contaminants and contaminated products triggered debate on the concept of risk analysis in mycotoxin regulation, the systematic review of dangers, exposure and, therefore, risk, clearly being one way of protecting human health, without however neglecting the management of risk and necessary communication. One of the papers presented at the Conference (Kuiper-Goodman on p. 10) looked at the risk assessment process for these very distinctive contaminants. Another dealt with the specific processes implemented by JECFA (Herrman and Walker on p. 17).

The Conference then looked at mycotoxin regulations and enforcement modalities. The first paper presented reviewed worldwide regulations, and the second (Park, Njapau and Boutrif on p. 49) drew attention to the usefulness of the Hazard Analysis and Critical Control Point (HACCP) concept in reducing the risk of mycotoxin contamination. The Conference concluded by examining the importance of analysis and sampling techniques in the control of mycotoxins.

Several conclusions and recommendations were made. In particular, the Conference insisted that countries take note of the risk assessment methodologies that had been developed by the international organizations, so that their safety and health requisites would be transparent and scientifically justified. This echoed the provisions of the World Trade Organization (WTO) Sanitary and Phytosanitary Agreements (SPS).

It also recalled that impact on human health remained the primary concern, although control measures should also take social and economic consequences into account. High priority was given to the work of JECFA which was urged to discuss the matter as soon as the necessary data – preferably based on observations with human beings – had been gathered. Particular attention would be paid to children and efforts would be made to standardize methodologies for input evaluation.

Some geographical areas such as sub-Saharan Africa have little information on the extent of contamination – a shortcoming that should be put right through partnerships between developed and developing countries. As regards the more specific question of prevention and control, it was recommended that research be directed towards developing varieties that are resistant to fungal infestation. The integrated mycotoxin control programmes should reflect HACCP principles. Training requirements were also stressed, on: HACCP principles and programmes; good agricultural and manufacturing practices; and the development of practical control and management strategies.

Finally, the Conference pointed out that regulation and control should concentrate on the principal sources of contamination to maximize returns from limited available resources. Specific recommendations for aflatoxins, fumonisins and ochratoxins were also made. The Conference examined the problems of sampling and analysis and identified a clear need to pursue research on sampling plans, techniques of analysis and reference materials to cover a wider range of products and mycotoxins. A manual explaining the different sampling methods and stages should be produced. At the same time, simple and robust analytical methods should be developed for use in developing countries, with FAO, WHO and UNEP providing assistance with technology transfer. Analytical standards are needed, particularly for the less common mycotoxins, and FAO could again play a key role here as a clearing-house for information. FAO, WHO and UNEP should also promote the development of analytical methods that are environmentally friendly and not harmful to laboratory staff. ◆